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3D-PRINTED BOBBIN

HP INC

3D-Printed Bobbin

Abstract: A one-piece bobbin fabricated using powder-based additive manufacturing techniques keeps yarn wound on the bobbin from unraveling until the bobbin is squeezed and the yarn pulled.

This disclosure relates to the field of bobbins, and particularly those used in crafting.

A technique is disclosed for fabricating a bobbin via powder-based additive manufacturing that keeps yarn wound on the bobbin from unraveling until the bobbin is squeezed and the yarn pulled with one hand to release the amount of yarn desired.

Anyone doing colorwork in knitting, crochet, or other crafts knows the misery of keeping many strands of different colored yarns going at once. Bobbins, one for each color or type of yarn, are a solution to that problem. Many vendors sell bobbins for knitters. The best of prior bobbins are flexible plastic that encases the yarn and which are flipped up to release some yarn. These bobbins have disadvantages, however. Either they don't securely hold the yarn and thus unwind too easily, or they require too much manipulation to release the amount of yarn desired. Both hands must be used to flip up the flexible top to release the yarn from these bobbins.

According to the present disclosure, and as understood with reference to the Figure, a bobbin 10 is printed as a single part comprising an interlocked set of two pieces, and requires no assembly. The bobbin 10 is illustrated in its fabricated form 2, and in a form 4 in which the spinner 20 has been removed to show the catch-and-release mechanism more clearly.

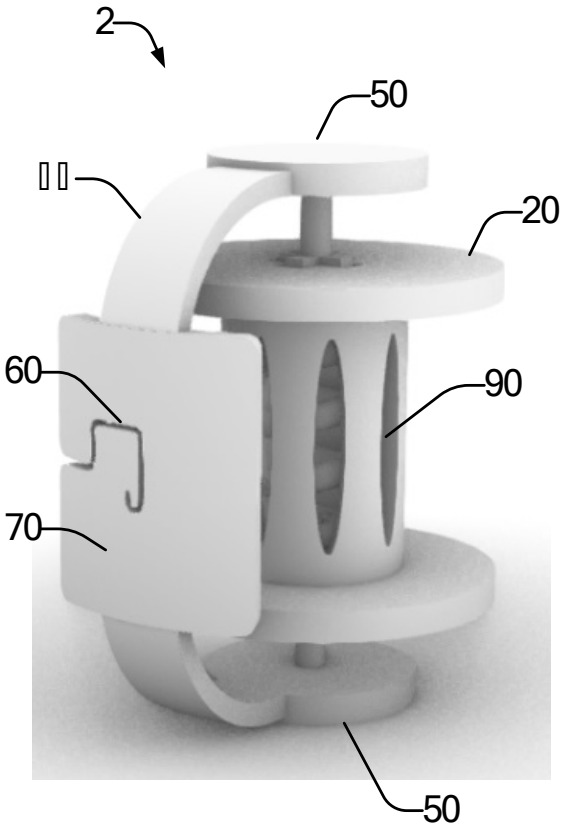
The catch-and-release mechanism has an integral spring 30. The spinner 20 is caught against the cross bars 40 of the catch mechanism until that mechanism is squeezed by applying force to locations 50 to move them towards each other. The force can be applied with the thumb and index finger of one hand. Doing so moves the cross bars 40 inside the spinner 20 out of the disks 80 which catch and hold them fixed, such that the spinner 20 can spin freely when the bobbin 10 is squeezed. The yarn is wrapped around the spinner 20, and threaded through the guide 60 in the outside bobbin plate 70.

The bobbin 10 cannot be produced via injection molding or a non-powder-based additive manufacturing process, because the powder serves as a support material during fabrication which allows these interlocked pieces to be printed as one. The slits 90 in the spinner 20 allow the powder to be sandblasted out of the spring 30 in the middle of the spinner 20 after fabrication of the bobbin 10 is complete.

The bobbin can be customized for the gauge of different weights of yarn. The bobbin can be sized for different lengths of yarn. Bobbins can be made taller and wider, or where the outside bobbin is placed further from the center to make room for more yarn to be wound around the spinner. The bobbin can be printed in different colors, with different patterns of color, with different outside textures, or with text applied to the outside.

The disclosed bobbin advantageously makes use of the flexibility and strength of parts fabricated via powder-based additive manufacturing to include an integral internal spring mechanism which makes it possible to keep a section of yarn or thread available, but released only when the user squeezes the bobbin.

Disclosed by Mary G. Baker, Hewlett-Packard Inc.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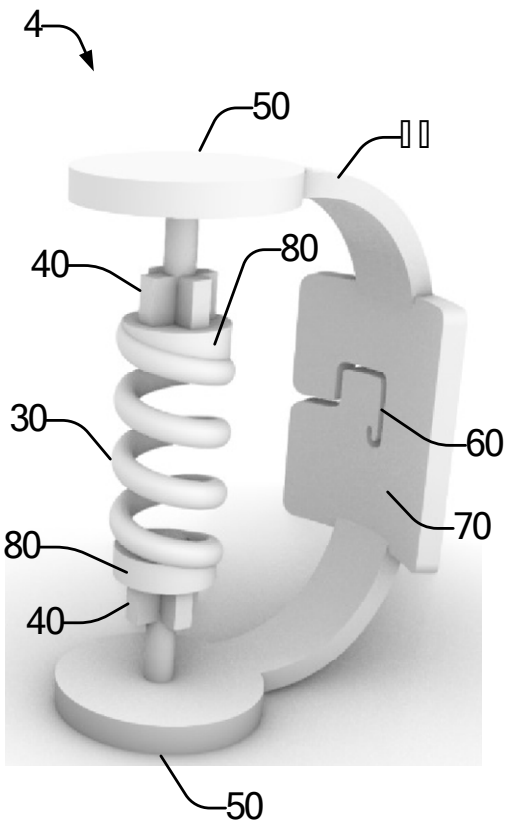
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